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TRANSLATION OF PCT/EP03/00118

**Mechanical loom comprising a warp beam**

The invention relates to a mechanical loom comprising a warp beam, the said mechanical loom moving a warp thread or a warp thread group with a drawing action, the warp thread being drawn from a thread store.

Mechanical looms are known from the prior art, in which the warp thread or the warp thread group is positively driven predominantly via a rocker. The thread tension is set by means of a spring force. As soon as this force is overcome by the thread tension, a limit switch is triggered, which activates a geared motor and drives the warp beam positively until the limit switch has returned to its basic position again. In this known embodiment, the spring force which is not uniform proves to be a disadvantage, the result of this being that the warp thread tension is uneven, which, in turn, has an adverse influence on the quality of the woven or knitted fabric to be produced.

In light of the prior art described above, a technical problem for the invention is seen in constructing a mechanical loom of the type in question in an improved manner, particularly with regard to evening of the warp thread tension.

This problem is solved initially and substantially by means of the subject matter of claim 1, there being provision for guiding the warp thread, downstream of the thread store, via a deflecting roller formed as a measuring roller, the said measuring roller detecting the thread tension prevailing there and influencing the warp beam drive in dependence on this. As a result of this configuration according to the invention, the warp beam is driven evenly, with the result that a uniform warp thread tension is achieved at the same time. The deflecting roller formed as a measuring roller detects

the thread tension prevailing there and transmits a corresponding pulse to a control element, the latter controlling the drive at the warp beam. A uniform warp thread tension is in this case ensured by means of a sensitive electronic control. Thus, the drive of the warp beam is reduced as soon as the load acting on the measuring roller is determined as being too low. With an increased load, the warp beam drive is accelerated correspondingly. In an advantageous development of the subject matter of the invention, there is provision for the deflecting roller to be equipped with a force measurement bearing which delivers a signal corresponding to the measured force. Preferably, in this case, two force measurement bearings are provided, in which the deflecting roller is mounted. Advantageously, a control unit is provided, which processes the signal delivered by the deflecting roller or the force measurement bearing and converts it into control pulses for the warp beam drive. It also proves advantageous that a desired thread tension can be set at the control unit, so that a continuous drive of the warp beam is ensured. The warp thread guidance in the region of the deflecting roller is further improved in that the deflecting roller is preceded and/or followed by a guide roller on the draw-in side and/or the draw-off side. In order to achieve adaptation to the height of the shed exit of the mechanical loom and of the warp thread length from the warp beam to the mechanical loom, it is further proposed that a length compensation device is provided downstream of the deflecting roller. In this respect, it is preferred that the length compensation device is a jockey device which equalizes a thread tension coming, where appropriate, from the mechanical loom. Alternatively, there is also the possibility that the length compensation device is a spring compensation roller.

The invention is explained in more detail below with reference to the accompanying drawing which illustrates only three exemplary embodiments and in which:

Figure 1 shows an outline illustration of a rear stand of a mechanical loom with a warp beam drive and with a deflecting roller formed as a measuring roller;

Figure 2 shows an illustration corresponding to Figure 1, but with a length compensation device downstream of the measuring roller;

Figure 3 shows an illustration corresponding to Figure 2, but relating to a third embodiment.

A rear stand of a mechanical loom, not illustrated in any more detail, with a warp beam 1 and with a drive 2 for the warp beam 1 is first illustrated and described with reference to Figure 1.

The warp thread 3 or a warp thread group driven positively by means of the warp beam drive 2 is guided via a deflecting roller 4 formed as a measuring roller. The deflecting roller 4 is respectively preceded and followed by a guide roller 5 both on the draw-in side and on the draw-off side.

The deflecting roller 4 formed as a measuring roller is equipped with a force measurement bearing. This force measurement bearing, not illustrated in any more detail, determines the load acting on the deflecting roller 4 due to the warp thread 3, from which a signal S is generated. This signal S is processed in a control unit 6 and is converted into a control pulse I for the warp beam drive 2.

As a result of this configuration, via the measuring roller or deflecting roller, the thread tension prevailing there is detected, whereupon the warp beam drive 2 is influenced in dependence on this. Thus, the drive at the warp beam 1 is reduced as soon as the load acting on the deflecting roller 4 is determined as being too low. Correspondingly, if an increased load is determined, the warp beam drive 2 is accelerated.

By virtue of the configuration according to the invention, an even feed of thread tension to the mechanical loom is achieved.

Furthermore, the desired thread tension can be set at the control unit 6, the latter acting correspondingly on the warp beam drive 2.

As illustrated in Figure 2, in dependence on the shed exit height of the mechanical loom and of the warp thread length from the warp beam 1 to the mechanical loom, the deflecting roller 4 is followed downstream by a length compensation device 7, the latter being formed in the manner of a jockey device 8. This equalizes any thread tension coming from the mechanical loom.

Figure 3 shows an alternative embodiment of the length compensation device 7. Here, inter alia in order to equalize a thread tension coming from the mechanical loom, a spring compensation roller 9 is used, which is provided instead of the guide roller following the deflecting roller 4, but at the same time also assumes the task of this guide roller.

All features disclosed are (inherently) pertinent to the invention. The disclosure of the application hereby also incorporates in full the disclosure content of the associated/appended priority documents (copy of the prior application), also for the purpose of

incorporating features of these documents into claims of the present application.